United Nations A/66/294

General Assembly

Distr.: General
11 August 2011

Original: English

Sixty-sixth session
Item 19 (i) of the provisional agenda*
Sustainable development: sustainable mountain development

Sustainable mountain development

Report of the Secretary-General

Summary

The present report was prepared in response to General Assembly resolution 64/205, in which the Assembly requested the Secretary-General to report to it at its sixty-sixth session on the status of sustainable development in mountain regions. The report describes the status of sustainable mountain development at the national and international levels, including an overall analysis of the challenges that lie ahead, and provides suggestions for consideration by the Assembly as to how to continue to promote and effectively sustain development in mountain regions around the world within the existing policy context, including chapter 13 of Agenda 21, adopted at the United Nations Conference on Environment and Development, the Plan of Implementation of the World Summit on Sustainable Development ("Johannesburg Plan of Implementation"), the Millennium Development Goals and the upcoming United Nations Conference on Sustainable Development. The report was prepared by the Food and Agriculture Organization of the United Nations in collaboration with Governments, relevant agencies of the United Nations system and other organizations.

* A/66/150.

11-45091 (E) 010911

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I. Introduction

1. In 1998, the General Assembly adopted resolution 53/24, by which it proclaimed 2002 the International Year of Mountains. The resolution encouraged Governments, the United Nations system and all other actors to take advantage of the year in order to increase awareness of the importance of sustainable mountain development. In 2003, the Food and Agriculture Organization of the United Nations (FAO) prepared a report on the achievements of the year, which was transmitted to the General Assembly by the Secretary-General (A/58/134).

2. The International Year of Mountains in 2002 built on chapter 13 of Agenda 21, which focused on mountain issues, and was dedicated to protecting mountain ecosystems and improving the well-being of mountain people. The year acted as a catalyst for long-term, effective action to implement chapter 13, and it achieved much by raising awareness of the importance of mountains to life and the need to improve mountain environments and the livelihoods of the inhabitants of mountain areas. The activities of the year supported the establishment of 78 national committees for country-level action and strengthened partnerships with stakeholders in mountain issues, culminating in the launch of the International Partnership for Sustainable Development in Mountain Regions (Mountain Partnership) at the World Summit on Sustainable Development, held in Johannesburg, South Africa, from 26 August to 4 September 2002.

3. The International Year of Mountains led to the adoption by the General Assembly of resolution 57/245, by which it designated 11 December as International Mountain Day, as from 2003, and encouraged the international community to organize events at all levels on that day to highlight the importance of sustainable mountain development.

4. In its resolutions 59/238, 60/198 and 62/196, the General Assembly decided to consider, at its sixtieth, sixty-second and sixty-fourth sessions, respectively, under the agenda item entitled "Sustainable development", sub-items related to sustainable mountain development. At each of those sessions, the Secretary-General submitted reports entitled "Sustainable mountain development" to the Assembly (A/60/309, A/62/292 and A/64/222).

5. The present report is submitted in accordance with General Assembly resolution 64/205, in which the Assembly requested the Secretary-General to submit a report to it at its sixty-sixth session on the status of implementation of sustainable development in mountain regions. The report was prepared by FAO in collaboration with Governments, relevant agencies of the United Nations system and other organizations.

II. Background and challenges

6. There is increasing awareness that mountains, as the source of most of the Earth's freshwater, repositories of rich biological diversity, popular destinations for recreation and tourism and areas of important cultural diversity, knowledge and heritage, are fragile ecosystems of global importance. Covering about one quarter of the world's land surface, mountains provide life support for about 12 per cent of the world's population, as well as essential goods and services to more than half of humankind. Yet many of the world's most impoverished and food-insecure people

live in mountain regions. Consequently, there is a need to ensure the ecological health and the economic and social improvement of mountain areas, both for the sake of mountain inhabitants and for people living in lowland areas.

7. Awareness of the importance of mountain ecosystems and communities has increased since the adoption of Agenda 21, at the United Nations Conference on Environment and Development in 1992, which contained a chapter entitled "Managing fragile ecosystems: sustainable mountain development".[1] Commitment and will to support and sustain mountain ecosystems were strengthened during the International Year of Mountains, and the subject has gained an increasingly high profile on agendas at all levels. In the Johannesburg Plan of Implementation, adopted at the World Summit on Sustainable Development in 2002, actions required to address the sustainable development of mountain regions are set out in paragraph 42. Along with chapter 13 of Agenda 21, these measures serve as the overall policy framework for sustainable mountain development.

8. Despite increased recognition of mountain issues and tangible results, significant constraints remain to alleviating poverty, averting environmental degradation and attaining sustainable development in mountain regions, in line with the Millennium Development Goals.

9. It is nine years since the International Year of Mountains, yet many challenges remain. Mountain communities and their environments are still vulnerable to growing demands for water and other natural resources, expanding tourism, greater rates of out-migration, disproportionate incidence of conflict and the pressures of industry, mining and agriculture in an increasingly globalized world. The global economic slowdown, paired with soaring food prices, has dramatically increased the number of hungry and undernourished people, and mountain people are particularly vulnerable to food shortages. The threats and consequences of climate change provide new challenges requiring urgent attention and concerted efforts. There is a clear need for higher levels of funding and investment in mountain areas, for enhanced coordination and collaboration and for a stronger enabling environment with more supportive laws, policies and institutions.

10. The United Nations Conference on Sustainable Development, which is to be held in Rio de Janeiro in 2012, offers an important opportunity to ensure that sustainable mountain development has a prominent place on the global agenda, to secure renewed political commitment to such development and to review the mountain agenda, taking into account recent developments and current global challenges such as climate change, increasing natural disasters, water scarcity, desertification and the food and energy crisis.

11. The demand for goods and services from mountains is growing steadily. In the context of a green economy, new opportunities for investment are emerging, especially for renewable energy and ecosystem services (for example, freshwater and biodiversity conservation). These opportunities offer scope for economic development, but they also place increased pressure on an already fragile environment and scarce resources. The implementation of institutional arrangements, which ensure a balanced development of social, ecological and

[1] *Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992*, vol. I, *Resolution Adopted by the Conference* (United Nations publication, Sales No. E.93.I.8 and corrigendum), resolution 1, annex I, chapter 13.

economic capital, is essential in order to guarantee that these new opportunities are beneficial and do not perpetuate the degradation of social and ecological systems in mountain areas.

III. National actions

12. Action at the national level is a key factor in achieving progress in sustainable mountain development. It is beyond the scope of the present report to describe the multitude of activities undertaken by countries. The following sections provide selected examples and highlights of actions being taken at the national level.

Africa

13. In Morocco, a project in the Outat watershed in the high Atlas mountains (Midelt province) provides assistance to key stakeholders in combating desertification through watershed management. The project is implemented by FAO as a component of a Spanish-funded interregional programme. The Government of Morocco, with the support of FAO and the Mountain Partnership secretariat, has implemented a project for improving the production of saffron in the Anti-Atlas mountains. The project generated valuable information regarding the technical, social and economic aspects of production and processing, as well as a comprehensive overview of the saffron value chain.

14. Guinea is active in the implementation of the regional Fouta Djallon Highlands Integrated Natural Resources Management Project, funded by the Global Environmental Facility. Guinea hosts the Regional Project Coordination Unit, and 18 of the 29 project pilot sites are located in the country. A baseline survey and a watershed management plan have been developed for all pilot sites, as have interventions related to improving natural resources management and enhancing local livelihoods, which will be initiated in the fall of 2011.

Asia

15. Kyrgyzstan, with support from the Global Environment Facility, the United Nations Environment Programme (UNEP) and United Nations University, is operating the sustainable land management project in the High Pamir and Pamir-Alai mountains. Mountain communities have received small grants to mitigate the pressure on environment, including land degradation and soil erosion, as well as funding for wildlife conservation. Many international organizations and non-governmental organizations have been working with local municipal authorities in mountain areas to support the recently adopted "Pasture law" (2009).

16. Since 2009, China has implemented a number of plans and policies in this area that have been incorporated into the twelfth five-year plan for forestry development, which aims to improve forest coverage and forest carbon-sink capacity. The major national plans and strategies being jointly supported by competent ministries and governmental agencies include: the second phase of the Natural Forest Protection Programme; the Three North Shelterbelt Development Programme; the Wildlife Conservation and Nature Reserve Development Programme; the Programme for Converting Cropland to Forests and Grasslands; and the Integrated Agricultural Development Programme.

17. The medium-term livelihood rehabilitation project in earthquake-affected areas of Pakistan, implemented by the Earthquake Reconstruction and Rehabilitation Authority, with Swedish funding and technical support from FAO, was successfully completed in June 2011. In addition to the development of 1,789 community livelihood rehabilitation plans throughout the earthquake-affected areas as well as extended capacity-building activities, the project developed and implemented integrated and collaborative watershed management plans in 17 watersheds. Field activities included landslide stabilization, natural resource management, livelihood improvement and institutional innovation.

18. The project on sustainable mountain development, initiated by the Government of Turkey in 2008, with financial and technical support from FAO, was successfully completed in December 2010. Subsequently a strategic document was developed to mainstream sustainable mountain development in the national planning process. At the local level, a pilot project was implemented in the Yuntdagi mountains, Manisa province, to experiment with and display sustainable mountain development efforts in a concrete field reality.

Europe

19. The deep engagement and commitment of the Swiss Government in the field of sustainable mountain development, at both the national and international levels, continues, including through its funding of the Mountain Forum and the Mountain Research Initiative. Switzerland remains the main donor for the Mountain Partnership. In preparation for the United Nations Conference on Sustainable Development, in 2012, Switzerland has initiated regional and global assessments on the progress made in sustainable mountain development since the United Nations Conference on Environment and Development in 1992. Switzerland will host the Lucerne World Mountain Conference in October 2011, during which reports on sustainable mountain development will be presented and future challenges and opportunities in this area discussed. During its current Presidency of the Alpine Convention, Switzerland aims to foster collaboration throughout the Alps by taking up relevant political issues and sparking debate. The Government will launch an innovative public-private partnership for sustainable mountain development, with a novel forum celebrating International Mountain Day, to be launched in 2011 in four regions in the global South and North, including Verbier in Switzerland.

20. In the Sudety mountains of Poland, as a result of important projects implemented during the last five to six years to promote the idea of sustainable mountain development, financed by FAO, the Global Environment Facility, the EQUAL programme of the European Commission and some private foundations, local non-governmental organizations successfully established a real mountain alliance with a number of partners, including local and regional governments, agricultural universities, mountain culture centres and national and landscape protected areas. This alliance serves as a model for other mountain provinces in the country.

21. In Italy, the consistent use of European Union funds to support research and cooperation projects in mountain areas has facilitated work on a wide range of issues, primarily the effects of climate change, natural hazards, integrated risk management, climate-proof spatial planning, ecological networks and sustainable tourism. At the international level, Italy continues to participate in the activities of

the Mountain Partnership and provides financial support to its secretariat. The Italian Development Cooperation supports a number of projects in mountain areas, for example the "Stations at High Altitude for Research on the Environment" project, jointly implemented by UNEP and the Ev-K2-CNR (Italian National Research Council) Committee. Italy is strongly committed to ensuring that mountains receive adequate attention in key international processes, including after the holding of the United Nations Conference on Sustainable Development.

Latin America

22. Since 2009, the Committee for Sustainable Development in Mountain Regions of Argentina has been very active, both nationally and internationally. A national and provincial mountain platform targeting dialogue in the various mountain zones was established, while existing dialogues with different regions and provinces have been improved. The Committee has launched local and provincial mountain committees capable of involving the southern countries of the Andes and enhancing regional contacts and joint activities with mountain frameworks. In June 2011, the Committee, with the Mountain Partnership secretariat, organized an international workshop of the southern Andean countries with representatives from European entities working on sustainable mountain development.

23. Ecuador is preparing to implement a project on the enhancement of participatory management for sustainable development in the Andes. A project funded by the Global Environment Facility on the management of the natural resources of the Chimborazo volcano was launched in June 2011 and the Facility's National Committee recently approved the project identification form for a project on carbon and biodiversity in high Andean ecosystems, which was presented by the Consortium for the Sustainable Development in the Andean Region. Implementation of a project on combating desertification and degradation through watershed management, a component of a Spanish-funded interregional programme, is ongoing in the Manabi province with technical support from FAO. In July 2011, an FAO-funded project, implemented in the Cotopaxi area, with the support of the Mountain Partnership secretariat, successfully developed models for sustainable mountain agricultural farms as well as development plans.

24. In Guatemala, the Forest Incentive and the Smallholder Forestry and Agroforestry Vocation Incentive programmes promote mechanisms for environmental services and public goods provided by natural and planted mountain forests. From 2009 to 2010, 12,482 hectares of forest plantations and 39,919 hectares of natural forests were supervised and certified in the highlands. Guatemala invested $6,978,114 in incentives for forest management, generating more than 48,000 jobs and involving around 300 indigenous communities. The Vice-Presidency of Guatemala has endorsed the establishment of an inter-agency commission for the prevention and combat of illegal logging and the implementation of a pilot action plan aimed at strengthening forest management in the Guatemalan highlands.

25. In Peru, a multi-stakeholder national working group on mountain ecosystems initiated its second phase in 2011, implementing numerous programmes at both national and international levels. The regional governments of Piura, Ancash, Apurimac and Cuzco are implementing programmes on adaptation to climate change, while in Piura, Ancash and Huánuco, a programme on the sustainable use of

biodiversity in the "Gran Ruta Inca" and the in situ long-term conservation project for local varieties of crops are under way. Together with Ecuador and Colombia, Peru is involved in the regional programme for the management of Andean Forest ecosystems in the regions of Apurimac and Piura.

26. The Government of Mexico, through the National Forestry Commission, is undertaking a project with financial support from the World Bank and the Global Environment Facility to improve the effectiveness of the national programme for payments for environmental services in upper watersheds and mountain areas and to increase the provision of ecosystem services that generate local and global benefits. The project also promotes local mechanisms for payments for environmental services, with financial support from direct users of environmental services under a scheme of matching funds.

27. Chile depends heavily on mountain ecosystems for water, energy, minerals, tourism and the provision of subsistence habitat for indigenous peoples. To create a national committee for mountains, promoted by the Ministry of Foreign Affairs, a training workshop is scheduled to be held in September 2011 for the countries of the Andean region (Argentina, Bolivia (Plurinational State of), Chile, Colombia, Ecuador, Peru and Venezuela (Bolivarian Republic of)). The focus will be on melting snow caps and glaciers and the need for policies to manage the environmental and economic impacts of a changing climate.

IV. International actions

A. Thematic initiatives

Biodiversity conservation and mountain ecosystems

28. In 2004, the secretariat of the Convention on Biological Diversity adopted its programme of work on mountain biological diversity. At its tenth meeting, held in Japan in 2010, the Conference of the Parties to the Convention, undertook an in-depth review of the status of the programme's implementation and noted that: (a) the programme of work was successful in bringing together the international mountain community and improving the capabilities of institutions and organizations to promote conservation and sustainable use of biological diversity; (b) as of 2009, about 14.4 per cent of the mixed mountain system biomes were protected; (c) the observance of International Mountain Day and many regional and local initiatives are raising awareness of the importance of mountain biological diversity.

29. In 2010, the Protocol on Conservation and Sustainable Use of Biological and Landscape Diversity to the Framework Convention on the Protection and Sustainable Development of the Carpathians (the Carpathian Convention) entered into force. To support the implementation of the Protocol, the "BIOREGIO Carpathians" project was approved under the European Union South-Eastern Europe programme. UNEP Vienna, the interim secretariat of the Carpathian Convention, is a partner in the Austria-Slovakia cross-border project "Alpine Carpathian Corridor", which aims to re-establish the ecological corridor between the Alps and the Carpathians.

30. The Global Mountain Biodiversity Assessment (GMBA) Programme of DIVERSITAS International contributes to policy on the conservation and sustainable use of biodiversity in mountain regions. In 2010, the programme launched its portal on mountain biodiversity, permitting mountain-specific access to primary biodiversity data. In July 2010, it organized an international conference on the "Functional significance of mountain biodiversity" in Switzerland. With the support of the Swiss Agency for Development and Cooperation, the programme prepared a booklet on "Mountain biodiversity and global change" for the tenth meeting of the Conference of the Parties to the Convention on Biological Diversity.

31. During the tenth meeting, the Mountain Partnership secretariat organized a side event to explore more effective implementation of the programme of work on mountain biological diversity. The International Centre for Integrated Mountain Development organized two side events, entitled: (a) "Facing the challenges of mountain biodiversity conservation and management in a changing climate across the Hindu Kush-Himalayan region"; and (b) "Transboundary cooperation for biodiversity conservation: A strategy towards 'ecosystem approach' of the Convention on Biological Diversity and adaptation to climate change".

32. The Ev-K2-CNR Committee has successfully launched its project "Social, economic and environmental development of Central Karakorum National Park and buffer zone" in the north of Pakistan, with funding from the Governments of Italy and Pakistan. The project aims to support local authorities and stakeholders in building capacity in natural resources management in the park and its buffer zone, with a focus on poverty reduction. The Committee collaborates with Karakorum International University, the World Wildlife Foundation, the Aga Khan Rural Support Programme and several local and national non-governmental organizations.

33. In 2010, the Mountain Group of the Man and the Biosphere programme of the United Nations Educational, Scientific and Cultural Organization (UNESCO), which is hosted at the Institute of Geography of the Russian Academy of Science joined the Katunskiy Biosphere Reserve and the International Union for Conservation of Nature-World Commission on Protected Areas Mountain Protected Areas Network, to hold an international workshop in the Altai entitled "Climate change and connectivity conservation of biodiversity in the Altai-Sayan eco-region". The workshop adopted a plan of action for the Transboundary Altai-Sayan-Baikal Connectivity Conservation Management initiative (Russian Federation, Kazakhstan, China and Mongolia).

Climate change

34. As revealed by the rapid retreat of glaciers worldwide, mountains are early indicators of climate change. It is vital to study and monitor the biological, physical and environmental health of mountains in an effort to better understand, manage and mitigate the negative effects of climate change.

35. The Ev-K2-CNR Committee launched the Stations at High Altitude for Research on the Environment (SHARE) project to study climate and environment in mountain regions. The project's monitoring network currently includes 14 sites around the world. The installation of the highest automatic weather station at Mount Everest South col (8,000 metres) and the supraglacial automatic weather stations at 5,700 metres on the Changri Nup glacier strengthened the atmospheric monitoring in the Himalayas through the study of climatic impacts on glacier dynamics,

including the effects of black carbon in the atmosphere, including its effects on the snow-ice melting processes.

36. In June 2009, the Mountain Research Initiative co-sponsored a side event with Germanwatch and the German Federal Environment Agency at the meeting organized by the secretariat of the United Nations Framework Convention on Climate Change in Bonn on "Adaptation in mountain regions: Current directions and research needs for adaptation to climate change in mountain regions". The Initiative collaborated with the Mountain Partnership, the Government of Liechtenstein and the Swiss Agency for Development and Cooperation in organizing a side event at the fifteenth session of the Conference of the Parties to the Framework Convention to highlight the challenges posed by climate change to mountain regions.

37. The Global Mountain Biodiversity Assessment programme of DIVERSITAS prepared a report on the impacts of climate change on mountain biodiversity in Europe for the Council of Europe. The report gives an overview of recent literature about expected future climatic changes, discusses the impact of climate change on mountain biodiversity and furnishes recommendations on adaptation measures.

38. The Global Observation Research Initiative in Alpine Environments aims to establish and maintain a site-based network for long-term surveillance of the impact of climate change on fragile Alpine ecosystems and biodiversity in high mountain systems worldwide. The initiative is particularly active in the Andean region, supporting a regional monitoring system of 10 sites to assess the impact of climate change on biodiversity in the high Andes.

39. The Mountain Partnership secretariat actively promotes better awareness about the threats posed by climate change to mountain areas and facilitates the work of its members in this context. A document was prepared by the Swiss Agency for Development and Cooperation for the fifteenth session of the Conference of the Parties to the Framework Convention in the context of the Mountain Partnership on "Mountains and climate change — from understanding to action". During the sixteenth session of the Conference of the Parties, the secretariat organized, with member countries, two side events on: (a) adapting to the impacts of climate change in mountain areas: innovative approaches at local and national level; and (b) regional approaches for climate change adaptation in mountain areas.

40. In June 2011, a meeting was organized by FAO and the Mountain Partnership secretariat, with participants from Armenia, Bangladesh, Bhutan, Colombia, Kyrgyzstan, Lesotho, Morocco, Nepal, Peru, Slovenia, Tajikistan, the International Centre for Integrated Mountain Development and the secretariat of the Framework Convention, to discuss two major initiatives on mountains: the "Mountain Initiative" of the Government of Nepal, which was announced in 2009 at the fifteenth session of the Conference of the Parties by the Prime Minister of Nepal, to establish a stronger political lobby for mountain issues within the secretariat of the Framework Convention; and the Group of Mountain Landlocked Developing Countries, which was formally established by the Governments of Armenia, Kyrgyzstan and Tajikistan.

41. In June 2011, the Mountain Partnership secretariat along with the International Centre for Integrated Mountain Development, received a grant from the World Bank to support a strategic initiative on climate change impacts, adaptation and

development in mountain regions. The initiative will focus on raising awareness about the relationship between mountains and climate change among members of national delegations to the sessions of the Conference of the Parties to the Framework Convention, as well as politicians, scientists and practitioners working on climate change policy. The initiative will empower national delegations and experts to negotiate and mobilize international support to promote climate change adaptation for the mountain ecosystems.

42. In December 2010, the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety announced 10 million euros in funding for the programme of UNEP, the United Nations Development Programme (UNDP), and the International Union for the Conservation of Nature on ecosystem-based adaptation, including the joint project in mountain regions. The pilot phase of the programme will focus on the mountain regions of Nepal, Peru and Uganda for a period of four years (2011-2014).

Desertification

43. Dryland mountain ecosystems represent more than one third of all mountains and provide up to 90 per cent of the freshwater supply in those areas. Poverty and food insecurity appear to be particularly exacerbated in arid mountain areas. In addition, more than one quarter of the world's biodiversity hotspots are in such locations. The Mountain Partnership secretariat, the secretariat of the United Nations Convention to Combat Desertification and the Swiss Agency for Development and Cooperation are preparing a joint publication entitled "Highlands and drylands: mountains, a source of resilience in arid regions" to draw greater attention to, and promote a sustainable mountain development agenda on, these fragile, arid ecosystems.

44. DESIRE, an integrated research project including 26 international partners funded under the European Union sixth framework programme (2007-2012), has developed and tested sustainable land management strategies for areas vulnerable to desertification. Eleven of the 16 DESIRE sites, which are in the Mediterranean and across the world, are located in mountainous or hilly environments where the threat of desertification is aggravated by degradation and erosion. As part of the DESIRE project, the Centre for Development and Environment of the University of Bern has developed a participatory methodology to identify, evaluate and select the most promising sustainable land management strategies based on local contexts.

Mountain water

45. Mountain water resources are increasingly under pressure, with serious implications both for mountain and lowland areas. Greater attention is being paid to this critical issue through events, scientific publications and research programmes around the world, but more concerted efforts are required to face the growing challenges of adequate water quality and supply.

46. The International Centre for Integrated Mountain Development has been designated as the Asia-Pacific knowledge hub for water management in Asian mountain regions by the Asia-Pacific Water Forum. The Centre is also the knowledge partner of the Abu Dhabi Dialogue Knowledge Forum on the subject of Himalayan water. With the support of the World Bank, the Centre has launched a

small grant research programme on sharing benefits from water management from the rivers of the greater Himalayan region.

Watershed management

47. Since 2009, the follow-up to the FAO-led global review of watershed management experiences has received considerable attention. The technical resource book, *The new generation of watershed management programmes and projects*, and the policy document entitled "Why invest in watershed management?" continue to be widely disseminated. Recommendations from the global review are being applied as part of several field projects in Ecuador, Guatemala, Mauritania, Morocco, Pakistan and West Africa.

48. The twenty-seventh session of the European Forestry Commission Working Party on the Management of Mountain Watersheds, entitled "Integrated forest and water management of mountain watersheds: experiences and perspectives", was held in the Slovak Republic in April 2010. The twenty-eighth session of the Working Group will take place in September 2011 in Turkey on the theme "Water for forests — forests for water".

49. The International Centre for Integrated Mountain Development is focusing on capacity-building for integrated watershed management practices in the Hindu Kush-Himalayan region. International training courses on participatory integrated watershed management are held regularly and are constantly being customized to incorporate emerging thematic issues. Climate proofing of community watershed plans has been implemented with a focus on the development of high-altitude agribusiness, linking good practices to advance a green economy. In March 2011, the Centre and FAO organized a workshop to discuss a long-term programme to implement and field test the new generation of watershed management techniques in the Asia-Pacific region.

50. The Latin American Technical Cooperation Network on Watershed Management aims to increase technical capacity in watershed management, focusing on exchanges of experience, knowledge management and transnational cooperation. The network continues to play a key role in monitoring and fostering collaborative actions and the sharing of experiences in Latin America.

Disaster risk management

51. Disaster risk management in mountain areas is receiving increased attention, particularly in the context of the impact of climate change. The growing risks of glacial lake outburst floods in the Himalayas and of rockfalls in the Alps are only two examples.

52. The Integrated Management of Natural Disaster Risks project, carried out by the Central Asia Mountain Partnership in Kyrgyzstan, has allowed mountain communities living in the pilot villages to be better prepared for natural disasters, acquiring new knowledge and skills for the construction of bridges and dams.

53. The Second World Landslide Forum, which is being organized by the International Consortium on Landslides and its partners, will take place in October 2011 at FAO headquarters. With 25 thematic sessions on its agenda, the focus of this important global event is "Putting science into practice".

54. The International Centre for Integrated Mountain Development, in collaboration with the World Meteorological Organization (WMO), has launched a programme on regional flood information systems, with the goal of minimizing the loss of lives and property by reducing flood vulnerability in the Himalayan region. The Centre and WMO are working together to improve data quality, effective data collection and dissemination and regional cooperation.

Indigenous peoples issues

55. Indigenous groups living in less-favoured areas, such as mountains, are among the poorest in the world owing to socio-economic and political marginalization. Nevertheless, many lessons can be learned from their approaches to and experiences in managing and conserving mountain ecosystems.

56. The World Mountain People Association aims to make the voice and the needs of mountain peoples heard. It proposes to create regional centres for interaction and cooperation between mountain peoples and national policymakers, funding agencies and international actors. The Association is also elaborating global charter communities, territories and natural resources management activities and is organizing an assessment on progress made on the goals set out in chapter 13 of Agenda 21 in preparation for the United Nations Conference on Sustainable Development in 2012.

57. Yachay Wasi, based in Peru, is an indigenous non-governmental organization that focuses on the protection of biodiversity in the Andes and aims to make the voice of indigenous peoples heard at the global level. In 2008, after completing the first phase of an environmental project recovery of the circuit of four lakes in the provinces of Acomayo and Canas, Yachay Wasi launched its "Million native trees campaign".

Gender

58. Mountain women face many of the same challenges faced by women throughout the developing world, but those challenges are further accentuated by altitude, steep terrain and isolation.

59. Women Organizing for Change in Agriculture and Natural Resource Management has implemented a project entitled "Rural women's leadership" to strengthen the role and voice of women leaders in rural organizations at all levels and to promote the participation of representative women farmers' organizations in the strategic policy dialogue and negotiation arena at the national, regional and global levels. To date, the project has trained over 35 leaders among farmers in Nepal and 30 in the Philippines; these leaders have, in turn, trained over 200 rural women.

60. The International Centre for Integrated Mountain Development has organized a number of events on a variety of issues related to gender, climate change adaptation and development. One of the major problems in the Himalayan region is the growing feminization of mountain agriculture owing to the massive male migration, which has increased women's workload and drudgery.

Payment for environmental services

61. Mountain regions have a significant potential for the deployment of innovative financing mechanisms, including payment for environmental services schemes, given the global importance of their resources.

62. Since 2009, the Albertine Rift Conservation Society, in collaboration with the World Wildlife Fund of the United States, the University of Cambridge and various local institutions, has sought to assess the stock of environmental goods and services coming from the Greater Virunga region, a transboundary area between Uganda, the Democratic Republic of the Congo and Rwanda. The team produced a series of maps depicting the distribution and relevance of four major ecosystem services: water yield; carbon sequestration; timber and non-timber forest products; and tourism. The outcomes clearly show the major importance of high-altitude natural ecosystems in the Virunga massif, including the Virunga volcanoes and the Rwenzori mountains, in providing environmental benefits to lowland areas.

63. The pasture ticket, newly introduced in Kyrgyzstan, is an innovative payment for environmental services tool, replacing the old pasture renting system, whereby pasture use is now paid for in livestock units instead of hectares. The pasture ticket is an economic instrument for farmers to regulate livestock numbers depending on the capacity of the seasonal pastures, and, thus, protects against pasture degradation.

High-quality mountain products

64. The promotion, processing and marketing of high-quality mountain products are becoming increasingly important for the improvement of the livelihoods of the inhabitants of mountain communities around the world.

65. In 2011, a manual about the organic production of Andean crops was published by FAO and the Mountain Partnership secretariat on a project in the Cotopaxi area of Ecuador, providing technical information about traditional and innovative cultivation techniques without the use of chemicals. The project demonstrated that traditional mountain products not only contribute to family food security, health and a balanced diet, but can also significantly increase family income if sold in the right markets. In Morocco, a technical manual on good practices in growing saffron was issued as a result of the FAO-Mountain Partnership project on the saffron value chain mentioned above.

Tourism

66. Tourism in mountain areas is a potential long-term source of income that can create positive effects, which can also be channelled towards both conservation and benefit-sharing.

67. The World Tourism Organization has developed a set of indicators to assist managers in making informed decisions regarding issues of particular concern to mountain environments, including loss or degradation of flora and fauna, erosion, water quality and the economic benefits of tourism.

68. In 2011, the draft text of the Protocol on Sustainable Tourism to the Carpathian Convention was elaborated with the assistance of the World Tourism Organization and was adopted and signed on the margins of the Third Meeting of the Conference of the Parties to the Carpathian Convention.

Policy and law

69. The Fouta Djallon Highlands Integrated Natural Resources Management Project, funded by the Global Environmental Facility, is jointly implemented by the African Union, FAO and UNEP. The project involves eight countries in West Africa

(the Gambia, Guinea, Guinea-Bissau, Mali, Mauritania, the Niger, Senegal and Sierra Leone). One important component of the project is to mitigate the causes and the negative impacts of land degradation through the establishment of a regional legal and institutional framework for cooperation in transboundary natural resources management and the adaptation and harmonization of conservation laws within participating countries.

70. Since 1991, the European Association of Elected Representatives from Mountain Areas has promoted the participation of regional and local decision makers in the formulation of European policy for mountain issues, in particular issues related to regional, environmental and transport matters. Its main objective is to ensure that the specificities of mountain regions are reflected and considered in European Union policies. The Association currently includes members from 10,000 municipalities, 100 provinces and 50 regions from 11 national members. The Association also participates in a number of European projects.

Education

71. The International Programme on Research and Training on Sustainable Management of Mountain Areas was launched in 2007 by the Mountain Partnership secretariat, UNESCO and the Faculty of Agriculture of the University of Turin, Italy. The training programme is funded by the government of the Piedmont region, local authorities, the Consortium for Sustainable Development in the Andean Region, the International Centre for Integrated Mountain Development and the Swiss Agency for Development and Cooperation. In 2010, the training course focused on protecting mountain biodiversity and in 2011 on natural hazards and disaster risks management. Each year around 30 experts from developing countries are trained.

72. UNESCO has prepared a teaching resource kit for mountain countries with funding by the Flemish Government of Belgium. The kit targets schoolteachers and students in secondary schools in mountain areas of countries worldwide. It offers a creative approach to environmental education and is designed to stimulate students' curiosity and allow for a better transmission of scientific information and environmental knowledge.

73. The University of Central Asia has established the Mountain Societies Research Centre, dedicated to supporting and enhancing the resilience and quality of life of mountain societies through research on the sustainable development and management of physical, social, economic and cultural assets. The Centre's fellowship programme builds Central Asian capacity to conduct research to inform policy and practice to promote sustainable mountain development.

74. The Centre for Mountain Studies at Perth College in Scotland, which, since 2009, has hosted the UNESCO Chair in sustainable mountain development, has run an online Master of Science in managing sustainable mountain development since 2004. Building on this experience, the Centre is developing Masters-level courses in collaboration with institutions in Asia.

Research

75. In 2011, in collaboration with the Mountain Partnership secretariat, MRI has promoted the development and support of a network of scientists focused on global

change research in the mountains of sub-Saharan Africa contributing to the activities leading to the fifth assessment report of the Intergovernmental Panel on Climate Change, the United Nations Conference on Sustainable Development and the Conferences of the Parties to the United Nations Framework Convention on Climate Change, the Convention on Biological Diversity and the United Nations Convention to Combat Desertification. With support from the Swiss Agency for Development and Cooperation, the Mountain Research Initiative brokered an agreement between FAO and the University of Pretoria to create a coordination unit for the Global Change Research Network for African Mountains.

76. UNESCO, through its Man and the Biosphere programme, continues to implement its worldwide project on "Global change in mountain sites — developing adaptation strategies in mountain biosphere reserves". The project studies key drivers for and impacts of global changes, including climate change, in fields including biological diversity, availability of water resources, land use change and mountain economies. The results will provide a better understanding on how change will affect mountain environments and livelihoods.

77. The Centre for Mountain Studies has coordinated an integrated assessment of Europe's mountain areas for the European Environment Agency, which was published in September 2010. The Centre organized an international conference on global change and the world's mountains in Scotland, bringing together 450 participants from 60 countries and five continents. The Centre is also responsible for reporting on the mountain perspective for the two-year project entitled Geographic Specificities and Development Potentials in Europe, funded by the European Observation Network for Territorial Development and Cohesion, which aims to provide a coherent framework to characterize past trends and to map out the potential future development of the geographical specificities for territorial policy and regional development.

78. The Mountain Research Initiative has implemented two synthesis workshops, one on climate change and mountain water resources and the other on drivers of food security in mountain regions. The workshops are in preparation for further discussions on: urban growth in mountain regions; building resilience in coupled human-natural systems in mountains; and the vulnerabilities and management of ecosystem services in mountains.

79. Together with the Mountain Research Initiative, the Chinese Academy of Science has developed and promoted the "Third pole environment", an international project focused on investigating the nature and impacts of global change on the Tibetan plateau and the surrounding mountain ranges. Since 2009, the Academy has organized annual "Third pole environment" workshops to develop a strategic science plan to organize research efforts by groups from all of the countries in the region and in Europe.

80. In 2010, the Mountain Group of UNESCO Man and the Biosphere programme initiated a consortium of research institutions of the Siberian Branch of the Russian Academy of Sciences, partner universities and biosphere reserves, with the objective of developing a strategy for sustainable development and landscape diversity conservation in the transboundary Altai-Sayan-Baikal eco-region within the context of current global changes. The research is being conducted under partnership arrangements with regional research institutions in Kazakhstan, China, Mongolia and several international institutions, including UNDP, the International Centre for

Integrated Mountain Development and the International Union for the Conservation of Nature.

Communications and networking

81. The Mountain Forum is a global network promoting sustainable mountain development through information and knowledge sharing. With support from its regional networks (Asia-Pacific, InfoAndina and European Mountain Forum) the Forum currently serves more than 7,000 individual members, providing access to more than 5,600 digital resources. The Forum also supports the global mountain community by serving as an information clearing house and providing platforms for dialogue among its users. The most recent e-forums were related to benefit-sharing mechanisms for hydrological environmental services in the Andes. A programme of the Consortium for Sustainable Development in the Andean Region, InfoAndina currently supports the implementation of several policy dialogues on climate change, water management and rural innovation.

82. In 2010, the theme of the International Mountain Day, "Mountain minorities and indigenous peoples", highlighted the threats faced by those communities, but also acknowledged the invaluable contributions they make towards overcoming the global challenges of hunger and malnutrition, biodiversity loss and climate change. The 2011 International Mountain Day will focus on mountain forests and will be linked to the International Year of Forests 2011.

83. The international peer-reviewed quarterly journal *Mountain Research and Development* enhances knowledge on key sustainable mountain development issues by bringing together research findings and validated development experience. Since 2009, the journal has been available online, with open access for all users. The journal also produces special issues on subjects including mountain forests in a changing world, agro-biodiversity and management tools and methods for protected areas. The editorial office of the journal is part of the Centre for Development and Environment at the University of Bern.

84. The Central Asia Mountain Partnership Forum 2010, a learning and knowledge sharing event entitled "Mountain communities of Central Asia and climate change — call to action: Global challenges in local perspectives", took place in November 2010 in Kazakhstan. It brought together more than 100 participants from Central Asia, Europe and Latin America, representing a variety of stakeholder groups.

B. Partnerships, transboundary cooperation and funding mechanisms

United Nations Conference on Sustainable Development

85. Members of the Mountain Partnership, including the Governments of Italy and Switzerland, FAO, the World Bank, UNEP and the International Centre for Integrated Mountain Development, are working together to draw attention to mountain ecosystems and the views of mountain peoples in the United Nations Conference on Sustainable Development processes. These organizations have formed a strategic alliance to position the Mountain Partnership as an agent for transformation towards green growth and to secure renewed political commitment for sustainable mountain development. Regional findings and global assessments on progress made in sustainable mountain development since the United Nations

Conference on Environment and Development in 1992, initiated by the Government of Switzerland, and the outcomes of the "Lucerne World Mountain Conference" will be channelled into the preparation processes for the Conference.

Partnerships

86. The Mountain Partnership has a growing membership, which currently includes more than 180 members, including Governments, intergovernmental organizations and major groups. In 2008, the Mountain Partnership secretariat began a process of decentralization to provide more effective services and support to its members. Today, the secretariat consists of the central and decentralized hubs hosted, respectively, by FAO in Rome (central hub), the Consortium for Sustainable Development in the Andean Region in Peru (Latin America hub), the International Centre for Integrated Mountain Development in Nepal (Asia-Pacific hub), and the University of Central Asia in Kyrgyzstan (Central Asia hub), as well as the Environmental Reference Centre hosted by UNEP in Vienna.

Transboundary cooperation

87. In 2003, the Alliance of Central Asian Mountain Communities, an association of 41 mountain villages in Kyrgyzstan, Tajikistan and Kazakhstan, was established in the wake of the International Year of Mountains and the Bishkek Global Mountain Summit. The Alliance aims to improve livelihoods in mountain areas through capacity development and the sharing of experiences among its members and within networks of communities in mountain areas worldwide.

88. Argentina, Chile, Colombia, Ecuador and Peru have joined forces to promote a regional approach to development in the Andean region. Together these countries created an Andean initiative in the context of the Mountain Partnership. The Paramo Andino Project is a regional initiative of Venezuela (Bolivarian Republic of), Colombia, Ecuador and Peru, funded by the Global Environment Facility and executed by the Consortium for Sustainable Development in the Andean Region. The project is aimed at overcoming key barriers to biodiversity conservation and protecting the hydrology of the Paramo area. The hydrological monitoring of Andean ecosystems initiative is a regional undertaking to generate, improve and share information related to Andean hydrology and the impacts of global change.

89. Since 2009, the Centre for Development and Environment and its local and international partners have supported Tajikistan and Kyrgyzstan in a transboundary initiative on sustainable land management in the Pamir-Alai mountains. This initiative, funded by the Global Environment Facility, aims to address the interlinked problems of land degradation and poverty within one of Central Asia's crucial freshwater sources and biodiversity hotspots.

90. UNEP continues to lead an initiative that builds on experience sharing of the Alpine and Carpathian Conventions with other mountain regions, such as the Caucasus, the Dinaric Arc and the Balkans, to facilitate the development of a legal framework of regional cooperation. In the framework of the Environment and Security Initiative, UNEP supports transboundary cooperation in mountain areas in border regions of the Balkans. This work contributes to the stabilization of the region and the improvement of the environment. UNEP also facilitates the negotiations for a legally binding agreement of the Dinaric Arc.

91. The International Centre for Integrated Mountain Development, with UNEP support, has initiated the regional Kailash Sacred Landscape Conservation Initiative. A draft regional cooperation framework was developed for implementing conservation and ecosystem management activities within the transboundary Kailash Sacred Landscape initiatives in China, India and Nepal. An innovative and highly participatory approach was implemented to create a policy enabling environment, institutional networks and the knowledge base for regional collaboration.

Funding mechanisms

92. A preliminary portfolio analysis of World Bank investments in sustainable mountain development indicates investments of approximately $66 billion globally for the 2000-2010 period. Investments in sustainable mountain development in Eastern Europe, Central Asia and Latin America lead, with about $16 billion each, closely followed by investments of about $13 billion in East Asia and the Pacific. Africa and South Asia received investments in mountain regions amounting to about $8.8 billion and $8.3 billion, respectively, while only small amounts were directly associated with sustainable mountain development in the Middle East and North Africa.

93. Funding economic growth, political empowerment, citizenship equality and poverty reduction of mountain peoples forms part of the mandate of the International Fund for Agriculture Development. The Fund supports the development of innovative rural financial services, such as the Financing Facility for Remittances and the development of index-based weather insurance and related services, which are being piloted and tested, including in mountain areas.

V. Recommendations

94. **Since the last report of the Secretary-General on the topic of sustainable mountain development, significant progress has been made in terms of implementation, awareness-raising, institutional strengthening and international collaboration. Nevertheless, much remains to be done, especially in the light of current global challenges, including climate change, natural disasters, the food and energy crises, increasing water scarcity, desertification, ecosystem degradation, biodiversity loss and migration. While mountain regions and their inhabitants are disproportionally affected by such challenges, there may also be significant opportunities in the search for solutions. Mountain systems are essential building blocks for long-term sustainable development, poverty alleviation and the transition towards a green economy. The General Assembly, in its efforts to address those challenges in a manner that is consistent with chapter 13 of Agenda 21, the Johannesburg Plan of Implementation and the Millennium Development Goals, may wish to reiterate some of the possible courses of action for Governments such as those set out below:**

1. Recommendations related to international processes

(a) **Renew efforts to ensure that mountain issues are prioritized within development agendas and processes dealing with poverty reduction, food**

security, climate change and other issues that are critical to sustainable development in mountain areas;

(b) Promote, where relevant, the establishment of regional mechanisms for coordinated and integrated transboundary cooperation for sustainable mountain development; strengthen existing mechanisms, such as the Alpine and Carpathian Conventions, and promote the exchange of experiences and lessons learned;

(c) Support the collaborative efforts of the Mountain Partnership and encourage the active involvement of relevant governmental, civil society and private sector institutions at the national and regional levels;

(d) Increase efforts to conserve biodiversity in mountain areas and encourage multi-stakeholder cooperation for a more effective implementation of the plan of work on mountain biological diversity of the secretariat of the Convention on Biological Diversity;

(e) Support better integration of mountain issues in intergovernmental discussions, in particular discussions on climate change and combating desertification in the context of the United Nations Framework Convention on Climate Change and the United Nations Convention to Combat Desertification; take advantage of the potential of mountain forests for carbon storage and sequestration and of their consideration in Reduced Emissions from Deforestation and Forest Degradation (REDD) and REDD-plus programmes;

(f) Integrate sustainable mountain development into strategies towards a green economy and ensure that institutional arrangements are in place to allow mountain communities to benefit from these emerging opportunities and protect mountain resources from increasing demand;

(g) Foster exchange and collaboration between Governments, international organizations, non-governmental organizations, research institutions and civil society to assure that sustainable mountain development receives a prominent place on the agenda of the United Nations Conference on Sustainable Development;

2. Policy recommendations

(h) Encourage the continuation of existing or the establishment of new national committees or similar institutional arrangements, bodies and mechanisms to strengthen intersectoral coordination and collaboration for sustainable development in mountain areas;

(i) Encourage greater engagement by civil society and the private sector in the development and implementation of programmes related to sustainable development in mountains;

(j) Encourage the formulation and implementation of strategies, programmes, policies and laws that specifically address mountain issues and provide an urgent response to current challenges, including climate change and soaring food prices; support developing countries and countries with economies in transition through bilateral, multilateral and South-South cooperation, as well as through non-traditional arrangements, such as decentralized cooperation;

(k) Develop strategies for adaptation and mitigation of climate change that take into account the specific situation of mountain environments and communities; integrate those strategies into the National Adaptation Programmes of Action process of the United Nations Framework Convention on Climate Change;

(l) Enhance attention to disaster risk management in mountain areas, in particular with regard to rockfall, avalanches, glacial lake outburst floods, landslides and the impacts of climate change;

(m) Promote the conservation and sustainable use of increasingly scarce resources from mountain areas, especially water, through innovative management approaches and improved institutional mechanisms that cross administrative boundaries, as well as forward-looking political decisions that safeguard those resources for future generations;

(n) Elaborate strategies, programmes and policies for food security in mountains, allowing for timely responses to soaring food prices and related challenges, which disproportionally affect mountain communities;

(o) Enhance public services, particularly in the health and education sectors, and improve transport and communication infrastructures in mountain areas;

(p) Support education, extension and capacity-building programmes, in particular among local mountain communities, to further sustainable mountain development at all levels;

(q) Ensure, through more effective engagement in the decision-making process, that indigenous peoples' cultures, traditions and knowledge are fully recognized and included in development policy and planning in mountain regions, and that access and agreed upon rights to land and natural resources are respected;

(r) Foster strengthening of the role of mountain women in planning and decision-making processes that affect their communities, cultures, livelihoods and environments;

3. Recommendations related to financial mechanisms

(s) Increase levels of investment and funding for sustainable mountain development at the global, regional, national and community levels, including through innovative financial mechanisms and approaches, such as payments for environmental services and opportunities offered by the green economy;

(t) Promote and provide a supportive and enabling environment for the development of high-quality products and services from mountain areas as a means to improve livelihoods, protect mountain environments, encourage more active involvement by the private sector in the overall value chain for high-quality mountain products and improve access of mountain communities to national and international markets;

4. Recommendations for awareness-raising

(u) Support the continued development and implementation of communications, capacity-building and advocacy programmes for sustainable mountain development at all levels and take full advantage of the opportunities provided annually by the International Mountain Day on 11 December;

(v) Increase efforts to enhance awareness of the effects of climate change, as well as the risks and hazards faced in mountain areas;

5. Recommendations for research

(w) Support increased and better coordinated research efforts at all levels in order to gain an improved understanding of environmental, economic and social drivers of change affecting mountain regions and promote the collection of disaggregated data from mountain areas as the basis for informed decision-making for appropriate policies and programmes;

(x) In the context of climate change, increase efforts to monitor glaciers and run-off patterns in mountain areas in order to assess future water availability and pay specific attention to the hydrological impacts of climate change in dryland mountain ecosystems.